

CLAIMS

WHAT IS CLAIMED IS:

1. A computer system for designing transit systems, comprising:

a database engine adapted to store data related to a proposed transit system design including track segment data;

a simulation engine adapted to process said data related to a proposed transit system design into a simulation of said transit system design in use; and

a 3-dimensional graphics engine adapted to process said data related to said proposed transit system design into a visual rendering of said simulation in real-time with said simulation, wherein said database engine, said simulation engine, and said 3-dimensional graphics engine are all operably connected to each other.

2. The computer system of Claim 1, further comprising:

a reports engine adapted to process and report results from said simulation and provide the results to a user in real-time, wherein said reports engine is operably connected to said database engine.

3. The computer system of Claim 1, wherein said simulation engine further includes alarming functionality adapted to alert a user to predefined warning conditions as these conditions occur during said simulation.

4. The computer system of Claim 1, wherein said database engine, said simulation engine and said 3-dimensional graphics engine are directly connected to each other as part of a single computer.

5. The computer system of Claim 1, wherein said database engine, said simulation engine and said 3-dimensional graphics engine are connected to each other through a network connection.

6. The computer system of Claim 1, wherein said stored data in the database engine includes user-definable data about signaling attributes of the proposed transit system.

7. The computer system of Claim 1, wherein said track segment data includes, for each segment of track in the proposed transit system design, a unique track segment ID, a starting civil location, an ending civil location, at least one track type, and a track line ID defining a track line to which each track segment belongs.

8. The computer system of Claim 1, wherein said track type is selected from the group consisting of: block, station, platform, switch, and route trigger.

9. The computer system of Claim 7, wherein said stored data in the database engine includes transit

configuration data related to a vehicle for traveling over said proposed transit system design.

10 The computer system of Claim 9, wherein said simulation engine defines the travel of said vehicle over said proposed transit system with reference to the starting and ending civil locations of adjacent track segments.

11. The computer system of Claim 1, wherein said proposed transit system is selected from the group consisting of light rail, heavy rail, automatic people mover, and bus.

12. The computer system of Claim 1, wherein said simulation engine is adapted to perform performance calculations for the proposed transit system during simulation.

13. The computer system of Claim 12, wherein said performance calculations include the numbers of passengers moved per hour.

14. The computer system of Claim 1, further comprising:

a central office switch interface, wherein said central office switch interface manages an interaction between said database engine, said simulation engine and said 3-dimensional graphics engine.

15. The computer system of Claim 1, wherein said simulation engine is adapted to provide a training simulator for maintenance and signaling personnel.

16. The computer system of Claim 14, wherein said simulation engine is adapted to provide a training simulator for a central office dispatcher.

17. The computer system of Claim 1, wherein said 3-dimensional graphics engine produces accurate, three dimensional simulation content.

18. A method of simulating a transit system, comprising the steps of:

creating a topography of a transit system;

generating representations of transit vehicles;

establishing a route of transportation for said transit vehicles with respect to said topography; and

graphically displaying said transit vehicles and said topography in three dimensions.

19. The method of Claim 18, wherein said topography is a track circuit.

20. The method of Claim 18, wherein said transit system is selected from the group consisting of light rail, heavy rail, automatic people mover, and bus.